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No. 97-1709

Supreme Court, U.S.
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In the Supreme Court of the United States

OCTOBER TERM, 1997

KUMHO TIRE COMPANY, LTD., KUMHO U.S.A., INC., and HERCULES TIRE & RUBBER COMPANY, INC., *Petitioners*

v.

PATRICK CARMICHAEL, AN INDIVIDUAL AND FATHER AND NEXT OF KIN TO PATRICK CARMICHAEL, JR., A MINOR, LUZVIMINDA CARMICHAEL, AN INDIVIDUAL AND MOTHER AND NEXT FRIEND OF CARINA HORN, A MINOR, AND ADMINISTRATRIX OF THE ESTATE OF JANICE HORN, CARINA HORN, A MINOR, LEONA CARMICHAEL, SHAMEELA CARMICHAEL, AND NATIMAH CARMICHAEL, *Respondents*

On Writ Of Certiorari
To The United States Court Of Appeals
For The Eleventh Circuit

BRIEF FOR PETITIONERS

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62 pp

QUESTION PRESENTED

Whether a trial judge may consider the factors set forth by this Court in *Daubert* v. *Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993), in a Federal Rule of Evidence 702 analysis of the admissibility of an engineering expert's testimony.

RULE 29.6 STATEMENT

Petitioner Kumho Tire Company, Ltd. ("Kumho"), formerly known as Kumho & Company, Inc., is a publicly traded corporation organized and existing under the laws of the Republic of Korea (South Korea). Kumho owns an interest in the following publicly traded South Korean companies: Asiana Airlines, Inc.; Kumho Construction & Engineering, Inc.; Korea Kumho Petrochemical, Ltd.; Kumho Telecom Co., Ltd.; Kumho Investment & Finance Co., Ltd.; and Kumho Development, Inc. All of the Kumho entities that are publicly held are traded on the South Korean Stock Exchange. Kumho has no subsidiaries other than wholly owned subsidiaries. In 1984, Samyang Tires, Inc., the first-named defendant in the proceedings below, was merged into Kumho (with Kumho being the surviving corporation).

Petitioner Kumho U.S.A., Inc. is a California corporation and a wholly owned subsidiary of Kumho. It has no subsidiaries.

Petitioner Hercules Tire & Rubber Company, Inc. is a closely held Ohio corporation with no subsidiaries other than wholly owned subsidiaries. It owns a stake in the following closely held corporations: Carmerica Corporation; Tire Depot, Inc.; and Zhongken-Hercules Corporation.

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OPINIONS BELOW

The opinion of the court of appeals is reported at 131 F.3d 1453 and reprinted at JA 95-104. The opinion of the district court (JA 26-47) is reported at 923 F. Supp. 1514. The district court's unpublished opinion on reconsideration is reprinted at JA 88-94.

JURISDICTION

The district court entered its judgment on April 1, 1996 (JA 26-47), and denied respondents' motion for reconsideration on June 5, 1996. JA 88-94. The court of appeals entered its judgment on December 23, 1997. JA 95-104. The petition for a writ of certiorari was filed on March 23, 1998, and was granted on June 22, 1998. This Court's jurisdiction rests on 28 U.S.C. § 1254(1).

RULE INVOLVED

Federal Rule of Evidence 702 provides:

> If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise.

STATEMENT

This case arises out of a single-car accident that occurred when the right rear tire of a minivan failed and the driver was unable to maintain control. Following the accident, the injured driver and passengers (or their representatives) brought suit against the tire manufacturer and various other defendants (petitioners here), claiming that the failed tire was defective in either its design or its manufacture. In support of that claim, plaintiffs (respondents here) sought to present the testimony of an expert in "tire failure analysis." Relying on Rule 702 and this Court's decision in *Daubert* v. *Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993), the district court excluded the testimony on the ground that it was "simply too unreliable, too speculative, and too attenuated to the scientific knowledge on which it is based to be of material assistance to the trier of fact." JA 43. The Eleventh Circuit reversed, holding that the district court erred in considering any of the factors of evidentiary reliability set forth in *Daubert*, because those factors apply only to "scientific" experts and because

plaintiffs' expert purported to base his opinion on his "experience" rather than on any scientific methodology. JA 101-04.

A. The Accident And The Tire

1. On July 6, 1993, respondent Patrick Carmichael was driving a 1988 Ford minivan on the final leg of a cross-country trip from Washington State to Alabama. JA 25, 27. In addition to the driver, the minivan was carrying seven passengers and a large amount of luggage. JA 27. As the minivan approached Mobile, Alabama, the right rear tire failed and Carmichael lost control of the vehicle. JA 27. The minivan overturned, and six of the eight occupants were ejected. JA 27. All of the occupants sustained injuries as a result of the accident, and one person died. JA 27.

Carmichael had bought the minivan used and "as is" from a dealership in Tacoma, Washington on April 30, 1993. JA 24, 27-28. He was its sixth owner. JA 24. Several years earlier, the minivan had been involved in an accident that caused substantial damage to its front end. JA 24. At the time of the sale, the minivan's odometer registered 88,997 miles. JA 28. When the Carmichaels' accident occurred, the odometer registered 96,008 miles, indicating that the minivan had been driven more than 7,000 miles in the two months that the Carmichaels owned it. JA 28.

The tire that failed was a Hercules Superior XII steel-belted radial manufactured by petitioner Kumho Tire Company, Ltd. ("Kumho") in February 1988. JA 28. It was stamped at the Kumho factory in South Korea with the name "Hercules," signifying petitioner Hercules Tire & Rubber Company, Inc. ("Hercules"), which is in the business of buying and distributing tires manufactured by others. JA 28-29. When new, the tire had a tread depth of between 10/32 and 11/32 of an inch. JA 28. At the time of the accident, the tire's remaining tread depth was between 0/32 and 3/32 of an inch, and it had a visible bald spot. JA 28, 287-88, 293-94. In addition, the tire had been punctured by a nail or screw during its service life, and although a patch had been placed on the innerliner, the exterior hole caused by the puncture had not been adequately filled. JA 28, 258, 259, 313. There was also a second hole in the tread that extended into the steel belts at

exactly the point where the tire came apart. JA 320-22. This second puncture, like the first, had not been adequately filled.[1]

2. Steel-belted radial tires are complex products composed of rubber, steel, fabric, and other materials that are melded together through a heating process known as vulcanization. See Gough, "*Structure of the Pneumatic Tire*," *in* MECHANICS OF PNEUMATIC TIRES 225 (Clark ed. 1981). The most important structural element of a tire is its carcass, which is made up of multiple layers of flexible cords, called plies, that are encased in a relatively rigid rubber compound. J. WONG, THEORY OF GROUND VEHICLES 4 (1978). The distinctive characteristic of a radial tire is that the ply cords run perpendicular to the centerline of the tire tread. Two or more steel belts are placed on top of the plies (Gough, *supra*, at 219) but are aligned directly underneath, and run parallel to, the tread. T. FRENCH, TYRE TECHNOLOGY 5 (1989).

A single tire can contain as many as a dozen different rubber compounds, each with different physical properties. Beatty, "*Physical Properties of Rubber Compounds*," *in* MECHANICS OF PNEUMATIC TIRES, *supra*, at 872. For example, tire tread must be hard to provide good wear characteristics, but it cannot be so hard as to affect tire traction adversely. See J. DIXON, TIRES, SUSPENSION AND HANDLING 69 (1996). Rubber compounds in the sidewall are less rigid than tread rubber, but must be able to resist fatigue, oxidation degradation, and ozone attack. Beatty, *supra*, at 875. A different rubber compound, butyl rubber, is often used as the innerliner of a tubeless tire because of its low air permeability and good resistance to flex. *Id.* at 880. Another rubber compound with good adhesion and fatigue characteristics is used to create the textile-rubber plies that make up the carcass. See *ibid.* A stiffer compound is used with steel to form the belts used in radials. *Ibid.*

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[1] According to respondents' own expert, the tire should have been removed from service before the accident because it had a bald spot and failed to comply with standard industry guidelines (which suggest a minimum tread depth of 2/32 of an inch). JA 293-94; see also 49 C.F.R. § 570.9(a)(1) (requiring passenger tires to have minimum tread depth of 2/32 of an inch); Ala. Code § 32-5-210(a)(1) (1975) (same).

The physical characteristics of these rubber compounds vary with temperature more rapidly than most conventional structural materials and can change with strain and age, adding yet another level of complexity to the analysis of tire performance. *Beatty*, *supra*, at 876. Tire performance is also affected by numerous other variables, including "the inflation pressure, the strength of rubber-to-rubber and rubber-to-cord bonds and internally generated heat due to speed and general conditions of service." T. FRENCH, *supra*, at 17. A complete analysis of tire wear therefore entails a complex "set of phenomena * * * involv[ing] both physics (or mechanics) and chemistry." Veith, "*The Most Complex Tire-Pavement Interaction: Tire Wear*," *in* THE TIRE PAVEMENT INTERFACE 126 (Pottinger & Yager eds. 1986).

B. The Proceedings In The District Court

On October 20, 1993, respondents filed this diversity action in the United States District Court for the Southern District of Alabama against the manufacturer of the minivan (with whom petitioners settled for $500,000); petitioner Kumho, the manufacturer of the tire (and successor-in-interest to defendant Samyang Tires, Inc.); and petitioners Hercules and Kumho U.S.A., Inc., the alleged distributors. JA 29. Respondents advanced claims against petitioners under Alabama law for negligence/wantonness, breach of warranty, and violation of the Alabama Extended Manufacturers Liability Doctrine (AEMLD). See *Casrell* v. *Altec Indus., Inc.*, 335 So. 2d 128, 132 (Ala. 1976).

Respondents' claims required proof of a manufacturing or design defect in the tire. JA 32. To satisfy this requirement, respondents initially identified George Edwards as an expert in "tire failure analysis." Edwards is the principal of George Edwards & Associates, Inc., a litigation consulting firm that performs tire-failure analyses for plaintiffs. JA 170. On September 14, 1994, Edwards issued a one and one-half page report containing his opinion that the tire failed when the tread and belts came apart (known as a "separation") and that the separation in turn was "the result of a manufacturing defect in the form of insufficient adhesion." JA 333.

Before Edwards could be deposed, however, he became too ill to testify and transferred the case to his employee, Dennis Carlson.

JA 96-97. Carlson holds bachelor's and master's degrees in mechanical engineering from the Georgia Institute of Technology. JA 97 n.2. Carlson joined Edwards' firm in August 1994, because he wanted eventually to work for himself and had the expectation that, if he showed "any business sense," Edwards would transfer the business to him when Edwards retired. JA 179, 415. Before becoming Edwards' employee, Carlson worked for another consulting firm that supplied expert witnesses to lawyers.[2]

On March 1, 1995, Carlson issued a one and one-half page report (also signed by Edwards), in which Carlson opined that the tire had failed through a separation caused by a manufacturing defect. JA 333-36. With the exception of a few minor changes in the nouns (from singular to plural) and the related verbs, Carlson's letter was identical to Edwards' prior opinion letter. Carlson's report stated that the failed tire had been "examined on July 1, 1993" in George Edwards' lab; noted various markings on the tire (such as its serial number); explained that the tire "was manufactured" in Korea "during the 6th week of 1978"; and observed that the tire "[d]uring its service life * * * was penetrated by an object such as a nail." *Ibid.* Carlson's report also noted that "[t]he tread depth remaining was 3/32" of an inch and stated that "[t]he rim flange impressions at the upper heel of the bead were normal, indicating that the tire had not been operated overloaded or underinflated." JA 336. On the basis of this analysis, Carlson offered the following opinion concerning the cause of the tire's failure (JA 336):

> The tread and belt separation initiated at the steel belt edges. The laminated surfaces showed evidence of insufficient adhesion between various interfaces. Chafe and polish was evident, indicating the separation pre-existed the tire failure over a prolonged period of time. * * * The tire failed as the

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[2] Before becoming a litigation consultant, Carlson worked for a number of years at Michelin Tire Company. His tire industry experience was in the area of design, not failure analysis. JA 122, 134-35, 140, 152-53. Carlson's tire design work concerned truck tires, which are notably different from passenger tires. JA 136-38, 145.

result of a manufacturing defect in the form of insufficient adhesion.

At the time Carlson expressed these conclusions, he had not conducted any physical examination of the tire. Instead, he had looked only at various photographs of the tire and based his opinion "totally on the photographs" and nothing else. JA 245. Carlson personally inspected the tire for the first and only time an hour before his deposition began, on the morning of March 7, 1995. JA 34, 180, 182. Carlson devoted approximately one hour to examining not only the failed tire but also the other three tires on the minivan. JA 182. Carlson's examination of the failed tire was aimed at "see[ing] if the photographs that I'd seen of the tire represented the tire." JA 180.

In his deposition, Carlson acknowledged that his March 1, 1995 report (and Edwards' previous report) contained a number of errors. For example, Carlson admitted that the reports incorrectly stated that "the accident tire * * * was received in a laboratory and examined on July 1, 1993," because the accident did not occur until five days later, on July 6, 1993. JA 21, 317. He also admitted that his report was mistaken in stating that the tire was manufactured in 1978 rather than 1988. JA 318. And Carlson admitted that the failed tire's tread depth — which the report stated was 3/32 of an inch — in fact ranged from 0/32 to 3/32 of an inch. JA 287-88. Finally, with respect to Carlson's essential conclusion (adopted verbatim from Edwards' previous report) that "[t]he tire failed as the result of a *manufacturing* defect in the form of insufficient adhesion," Carlson admitted that this "may be another mistake." JA 318-19 (emphasis added). Instead, Carlson testified that the tire failed because of either a manufacturing or a design defect — but that he could not tell which (or, for that matter, the precise nature of the defect). JA 319.

Following his deposition, at which he had acknowledged these errors, Carlson submitted a sworn affidavit, which repeated every error contained in the March report. See JA 412-13. The affidavit also stated: "*I* received the accident tire * * * *in the laboratory and examined it on July 1, 1993.*" JA 412 (emphasis added). In fact, as noted above, Carlson did not examine the tire until March 7,

1995, and his examination was conducted in respondents' lawyers' office, not in a "laboratory." JA 34, 180, 182.

1. *Carlson's Methodology for Determining the Cause of Tire Failure*. In his deposition in this case and in a closely related case, Carlson explained his methodology for determining the cause of a tire's failure.[3] He explained that tires need to be replaced for a variety of reasons, the most common being that their tread simply wears out. JA 278. Only a "small percentage" of tires, he noted, fail before the end of their tread life due to a design or manufacturing defect. JA 278-79, 401-02. Carlson also agreed that the vast majority of tires that come out of service before their tread wears out do so because of "abuse," a very broad category that includes punctures, impacts, cuts, damage resulting from the vehicle's operation, and "overdeflection," which occurs when a tire is operated overloaded, underinflated, or both. JA 278-79, 401-02.

According to Carlson, overdeflection is the most common type of abuse that causes separation. JA 205-06. An overdeflected tire is "squashed down more," with the result that the tire's sidewalls are bent at a greater angle than normal. JA 195-96. The "load profile" of the tire is thereby altered, causing the tire to generate more heat. Because "heat is the enemy of rubber," JA 144, overdeflection weakens the tire and can destroy its integrity. Overdeflection also can result from a cycle of air pressure variation, as where the owner of the vehicle periodically reinflates a tire with a slow leak (caused, for example, by an improperly repaired puncture). JA 208-09. The damage from overdeflection is cumulative. JA 190.

a. Carlson testified that the first step in any tire-failure analysis is to conduct a physical examination of the tire itself. JA 168, 347-49. In certain cases, the physical examination may include various tests that can help in determining whether a separation was caused by a manufacturing defect rather than abuse.

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[3] The related case, *Tillery* v. *Bridgestone/Firestone, Inc.*, Civ. Action 94-T-997-N (M.D. Ala.), also involved an allegation that a tire failed because it was defective. Petitioners submitted Carlson's entire deposition transcript in *Tillery* in support of their motion to exclude his testimony in this case. JA 9-10, 33.

JA 221-23. Such tests include (1) "decortication" (or cutting) of the tire to ascertain, for example, whether there was a misalignment of the steel belts, incorrect assembly of the "bead" (the portion of the tire, made of steel wires or hoops, wrapped or reinforced by ply cords, that is shaped to fit the rim), or deterioration in the sidewall; (2) x-rays, which could reveal "whether the belt is either too long or too crooked" or otherwise defective; and (3) chemical tests, such as for butyl contamination in the tire. JA 221-22, 236-37, 268-69.

In this case, as previously noted, Carlson did not conduct any physical examination of the tire before rendering an opinion about why it failed. Instead, he looked at *photographs* of the failed tire and then adopted verbatim the opinion of his employer, George Edwards. Carlson's physical examination of the tire occurred only *after* he had offered his opinion. Carlson admitted during his deposition that photographs can "trick some people" about the appearance of a tire because the flash of the camera can make the tire "look different." JA 252.[4]

Carlson did not decorticate or x-ray the tire, even though he agreed that decortication of the bead and sidewall might have provided information that could not be gleaned from a physical examination of the tire's exterior — such as whether a nylon or polyester protector had been used in the bead or whether the rubber was thinly laid there (questions that Carlson testified he "would like to look at"). JA 268-71, 273. Carlson also failed to conduct a chemical test for butyl contamination even though in his view such contamination "could have" occurred in this case. JA 273.

b. The second step in Carlson's methodology is to employ a process of elimination to rule out what Carlson admits is by far the most likely cause of a separation (abuse) in order to ascertain whether the tire failed because of a defect. In conducting this analysis, Carlson looks for four "signs of overdeflection" in the

[4] Carlson also admitted that in the photographs of the tire some of the areas of polish "don't show up very well." JA 249. Carlson was unable to determine from the photographs precisely where the tread separation began, stating that he had "to look at the tire to be sure" and that he had "better correlate that with the tire." JA 254-55.

tire: (1) greater tread wear on the shoulder (the curved part of the tread closest to the sidewall) than in the center of the tire; (2) deterioration and discoloration of the sidewall; (3) abnormal grooving of the bead; and (4) impressions or marks on the rim flange (the vertical portion of the rim against which the bead seats when the tire is inflated). JA 34, 210-13, 276-78.[5] Carlson repeatedly acknowledged that his determination of whether any of these factors is present is "subjective." JA 222, 224, 285-86. In addition, he cautioned that with respect to shoulder wear "you have to be very, very careful because one of the things in tire design is to equalize the wear" and "there have been many tread designs" that are intended to wear "either in the center or on the edge." JA 211, 273-74; see JA 231-33 (abnormal wear can also be caused by alignment and vehicle problems as well as driving habits). With respect to bead grooving, Carlson testified that it is "rather difficult to determine what is abnormal bead grooving"; ideally, one would need to "look at a lot of tires," perhaps "a hundred tires that had been run under ideal conditions," to ascertain "what the normal bead groove looked like" for a particular type of tire. JA 212-14.

Next, Carlson applies a "two-factor" rule of thumb to determine whether the tire has been abused. JA 222-24, 232-33, 391-92. As the district court explained, "[w]hen Carlson fails to find sufficient evidence of two of these four indicators in a tire, he rules out overdeflection as a cause of the tire failure and, barring other evidence of abuse, concludes that the loss of adhesion was prompted by a manufacturing or design defect." JA 34. Carlson testified that this "two-factor" rule of thumb was derived from his "experience" and had not been mentioned or endorsed in any publications on tire failure analysis. JA 38-39, 392.

In applying this approach in this case, Carlson "observed some evidence of uneven tread wear, sidewall deterioration, abnormal bead grooving, and rim flange impressions; however, he found that the evidence with respect to each factor was either insufficient to demonstrate overdeflection or was attributable to causes other than

[5] Carlson's opinion letter did not mention these four factors. Indeed, the letter suggested that overdeflection could be ruled out based solely on the absence of abnormal rim flange impressions. See JA 336.

overdeflection." JA 35. Carlson admitted that he had no idea whether the design of the Hercules Superior XII would have caused an abnormal wear pattern. JA 211-12. And, in evaluating whether there was abnormal bead wear, Carlson did not examine the hundred or so tires required to ascertain how normal bead grooving would have appeared. JA 214.

During his deposition, Carlson admitted that a puncture of the tire can lead to separation if the hole is not satisfactorily filled. JA 204, 258, 313. This can occur because air and moisture may enter through the unfilled hole and migrate between the layers of steel belts, thereby weakening the tire's interior structure. JA 204. Carlson acknowledged that there was no fill material in the exterior of the puncture he identified in his report. JA 259. After prompting by petitioners' counsel, including a request that Carlson examine the tire itself, Carlson admitted that there was a *second hole* in the tread of the tire located on a bald spot precisely where the separation began. JA 320-22.[6] The second hole was also inadequately filled.

c. The third step in Carlson's usual methodology is to "analyze records pertaining to, but not limited to, the tire's design, manufacturing, and testing to determine the specific nature of the defect, i.e., design or manufacturing." JA 17; see JA 346-52, 354, 356-57, 393-94. For example, Carlson indicated that review of the design and material specifications, the testing used for development of the product, the manufacturing and quality control procedures in the factory, and the tire's "adjustment" rates (the percentage of tires returned by customers), as well as a visit to the manufacturing plant, all can contribute to his understanding of whether there is a design or manufacturing defect in the tire. JA 319, 347-49. Carlson also testified that in determining "whether this is an engineering problem or a manufacturing problem" with a particular tire model, it is helpful to know, as a percentage of the total number of tires produced, how many separations have been reported. JA 393-94. In this case, however, Carlson did not

[6] Earlier in his deposition, Carlson had stated — consistent with his report — that there was only one puncture in the tire. JA 313.

examine *any* of these potential sources of information concerning the existence and nature of a design or manufacturing defect.[7]

2. *The Trial Court's Exclusion of Carlson's Testimony.* Following Carlson's deposition, petitioners moved under Rule 702 to exclude his testimony as unreliable and based on "speculation and conjecture." JA 9. Petitioners also moved for summary judgment, contending that without Carlson's challenged testimony there was no affirmative evidence of defect in the tire, as required by Alabama law. JA 7-8. The district court granted both motions. JA 26.

In excluding Carlson's testimony, the district court noted that Carlson "examined [the tire] for the first time on the morning that his deposition was taken," only "after Carlson had issued his written report and conclusions concerning the cause of the blowout." JA 34 n.6. In addition, Carlson "performed no tests on any of the minivan's tires at that time"; his "analysis was limited to a visual inspection of the tire, though he conceded that such actions as cutting the tire could reveal additional pertinent information." JA 34-35. The court also pointed out that Carlson "adopted Edwards' report and conclusions almost verbatim as his own." JA 34 n.6. And "neither the plaintiffs' written submissions nor the Court's review of Carlson's voluminous deposition transcripts indicate that Carlson identified any affirmative evidence of a defect in the tire." JA 35.

Next, the district court examined the reliability of Carlson's methodology against the four factors set forth in *Daubert* v. *Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993). At the outset, the court rejected as "meritless" respondents' argument that the *Daubert* factors were inapplicable because "Carlson's testimony is a mere 'technical analysis', rather than scientific evidence." JA 41. The court noted that "the *Daubert* standard has been routinely

[7] Carlson could point to no affirmative evidence that the tire failed because of a manufacturing or design defect. He observed both "chafe" (evidence that the tire's components had begun to rub together) and "polishing" (the shiny appearance caused by prolonged chafe) in the tire. But he admitted that these were byproducts of a separation, which may be caused either by abuse or defect. JA 239, 241, 364-65.

utilized by lower courts" in analyzing expert testimony "similar to that at issue in the present case." JA 41. While respondents "may be correct that Carlson's testimony does not concern a scientific concept per se," it "certainly is testimony about an application of scientific concepts involved in physics, chemistry, and mechanical engineering." JA 42-43. Thus, Carlson's testimony "is necessarily grounded in some scientific foundation," and a court must "consider the legitimacy of both the scientific foundation and the actual application of that foundation employed by Carlson." JA 43.

Applying the *Daubert* factors to Carlson's methodology, the district court found that none was "satisfied in this case." JA 41. With regard to the first *Daubert* factor — whether the expert's technique or theory "can be (and has been) tested" (509 U.S. at 593) — the court concluded that Carlson's "method for analyzing the tire is not susceptible to testing or falsification." JA 37. Carlson "could not identify any specific tests or other procedures which could be used to corroborate or refute the results of his visual inspection of the tire at issue," and he admitted "that his work is 'subjective' and that there is a certain degree of 'uncertainty' in his conclusions." JA 37-38. Nor did Carlson's methodology satisfy the second factor: "whether the theory or technique has been subjected to peer review and publication" (*Daubert*, 509 U.S. at 593). "Carlson concedes that there are no publications or papers which have approved or otherwise discussed his techniques for tire failure analysis." JA 38-39. Although Carlson does "identify a number of publications and research papers regarding tests which can be performed to assess the causes of abnormal tread wear," these papers "do not back his technique" because Carlson did not "actually perform any of the tests described in this literature on the tire in question." JA 39.

As for the third *Daubert* factor — the "known or potential rate of error" (509 U.S. at 594) — the district court explained that "Carlson testified repeatedly that he did not know the potential error rate of his method for determining whether a given tire failure is the result of abuse or a defect." JA 39. Although Carlson invokes his "experience" in "look[ing] at many tires" as a basis for his "differentiation between the two causes," he also "admits that he does not know whether his previous analyses of failed tires have been correct or incorrect." JA 40. And "there is no evidence that

he (or anyone else) has tested his methods in a controlled laboratory setting to gauge their accuracy in correctly distinguishing between overdeflected and defective tire separations." JA 40.

Finally, the district court explained that Carlson's methodology "does not pass muster under the fourth prong of the *Daubert* analysis," which considers whether the expert's technique is "generally accepted in the relevant scientific community." JA 40. "[T]he only evidence of general acceptance is Carlson's bare, unsupported statement that other tire experts have testified in depositions that methods similar to those used by Carlson are acceptable means of distinguishing between abused tires and defective tires in tire failure cases." JA 40. Accordingly, the court concluded that there was "simply no evidentiary basis * * * that the relevant scientific community accepts a visual-inspection, process-of-elimination analysis of tire failure in the manner it was performed by Carlson." JA 41.

Because Carlson's testimony was respondents' only evidence that the tire was defective, the district court also granted petitioners' summary judgment motions and dismissed the action with prejudice. JA 46-47.

3. *The Trial Court's Decision on Reconsideration.* Respondents moved for reconsideration, arguing among other things that the district court had erred by (1) applying *Daubert* to a "technical inspection"; (2) narrowing the *Daubert* inquiry to consideration of the *Daubert* factors alone; and (3) concluding that the *Daubert* factors were not satisfied in this case. JA 50-51. The court rejected these arguments and affirmed its previous decision that Carlson's testimony was inadmissible. JA 88.

With respect to respondents' renewed contention that the *Daubert* factors were inapplicable because Carlson's testimony was "not scientific evidence," the district court observed that "plaintiffs have offered no basis for reconsidering" its decision to reject that argument. JA 89. The court also rejected respondents' suggestion that it had applied the *Daubert* factors inflexibly to the exclusion of other pertinent considerations. The court agreed that "the list of criteria propounded in *Daubert* was intended neither to be exhaus-

tive nor to apply in every case," and noted that the inquiry into methodological reliability must be "'flexible.'" JA 91 (quoting *Daubert*, 509 U.S. at 594). But it explained:

> In this case, application of the *Daubert* factors *did operate to gauge the reliability of Carlson's methods*, and all of the factors indicated that his testimony was properly excluded. The Court's analysis revealed no countervailing factors operating in favor of admissibility which could outweigh those identified in *Daubert*, and the parties identified no such factors in their briefs. Contrary to plaintiffs' assertions, the Court did not convert the flexible *Daubert* inquiry into a rigid one; rather, the Court simply found the *Daubert* factors appropriate, analyzed them, and discerned no competing criteria sufficiently strong to outweigh them.

JA 91 (emphasis added).[8] Finally, the district court rejected respondents' argument that Carlson's testimony was admissible because it satisfied the *Daubert* factors.

C. The Proceedings In The Court Of Appeals

The Eleventh Circuit reversed, holding that the district court erred in giving any weight to the four *Daubert* factors of evidentiary reliability in evaluating whether Carlson's "tire failure" opinion was admissible. JA 104. The court of appeals characterized the *Daubert* factors as being "general" in nature (JA 98) and acknowledged that in *Daubert* this Court "emphasized" that "'the inquiry envisioned by Rule 702 is * * * a flexible one'" (JA 98 n.4 (quoting 509 U.S. at 594-95)). Nevertheless, the Eleventh Circuit held that the district court should not have given any consideration to these "general" factors in the "flexible" inquiry into admissibility mandated by Rule 702.

The Eleventh Circuit's analysis proceeded in three steps. First, the court concluded that the approach to assessing methodological reliability outlined in *Daubert* is applicable only to experts

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[8] The district court rejected as "of dubious merit" six additional considerations listed in respondents' motion for reconsideration under which (according to respondents) Carlson's testimony "may well have [been] found" to be admissible. JA 90-91 n.1; see also JA 62-63.

who are "scientific." To support that conclusion, the Eleventh Circuit explained that in *Daubert* this Court "explicitly limited its holding to cover only the 'scientific context.'" JA 99 (citing *Daubert*, 509 U.S. at 590 n.8). The panel did not explain, however, why such a limitation on this Court's holding would imply a prohibition on applying the *Daubert* factors outside of the "scientific context."

Next, the Eleventh Circuit considered "the difference between scientific and nonscientific expert testimony." JA 100. The court gave the following explanation: "a scientific expert is an expert who relies on the application of scientific principles, rather than on skill- or experience-based observation, for the basis of his opinion." JA 100. In concluding that "experience-based" expert testimony is not subject to the *Daubert* factors, the court of appeals relied heavily on an analogy put forth by the Sixth Circuit, which contrasted the knowledge a beekeeper and an aeronautical engineer might bring to bear concerning how bumblebees fly. JA 100-01 (citing *Berry* v. *City of Detroit*, 25 F.3d 1342, 1349-50 (6th Cir. 1994)).

Third, the Eleventh Circuit examined "whether Carlson's testimony is based on his application of scientific principles or theories (which we should submit to a *Daubert* analysis) or on his utilization of personal experience and skill with failed tires (which we would usually expect a district court to allow a jury to evaluate)." JA 101. To the court of appeals, it was "apparent" that "Carlson's testimony is nonscientific." JA 102. The court acknowledged that it was "no doubt correct" that "the laws of physics and chemistry are implicated in the failure of the Carmichaels' tire," but it concluded that Carlson himself "makes no pretense of basing his opinion on any scientific theory of physics or chemistry." JA 102. "Instead," the court explained, "Carlson rests his opinion on his experience in analyzing failed tires." JA 102. "After years of looking at the mangled carcasses of blown-out tires," the court explained, "Carlson claims that he can identify telltale markings revealing whether a tire failed because of abuse or defect." JA 102.

In remanding the case, the court of appeals remarked that "the inapplicability of *Daubert* should not end the day regarding

Carlson's reliability." JA 103. "Under Rule 702," the Eleventh Circuit explained, "it is the district court's duty to determine if Carlson's testimony is sufficiently reliable and relevant to assist a jury." JA 103. The court noted that "[a]side from its *Daubert* related arguments," petitioners had "presented * * * a number of potentially troubling criticisms of Carlson's alleged expertise and methodology, including his rendering of an opinion regarding the Carmichaels' tire before he had personally inspected its carcass." JA 103. "Even without requiring Carlson's testimony to satisfy the *Daubert* criteria on remand," the court said, "the district court may still find that, under all of the circumstances, Carlson's testimony is so unreliable as to be unhelpful to a jury." JA 103 n.9.

SUMMARY OF ARGUMENT

I. Under Rule 702 of the Federal Rules of Evidence, and this Court's decision in *Daubert* v. *Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993), *all* expert testimony must be screened for reliability and relevance before it may be admitted in a federal trial. There is no basis in the language of Rule 702, or in logic, for a trial court to abdicate its *Daubert* "gatekeeping" obligation when faced with some types of expert testimony. Such gatekeeping serves as an important check on the jury's inclination to give great (and sometimes undue) deference to expert testimony, and in product liability cases it ensures that the regulatory effect of jury verdicts does not lead to products that are unsafe (or drive valuable or safe products from the market).

II. The Eleventh Circuit was wrong in holding that a trial judge is barred from considering the four factors of evidentiary reliability set forth in *Daubert* if the expert purports to be testifying based on his "experience." The word "experience" encompasses a variety of meanings, ranging from the narrow (past firsthand observation) to the broad (all that one has previously undergone). A special approach built upon such a malleable and ambiguous concept would plunge the lower courts into endless litigation over whether or not the *Daubert* factors apply. Indeed, because "experience" in the broadest sense may be invoked by *any* expert witness, it would eviscerate Rule 702 if the *Daubert* factors could be avoided whenever an expert invokes "experience" as the basis for his testimony. In any event, contrary to the Eleventh Circuit's

view, the applicability of *Daubert* should not depend upon how the *expert witness* himself characterizes the basis for his testimony.

If the Eleventh Circuit believed that Carlson's testimony was based solely on his "experience" in the narrower sense (of past firsthand observation), it seriously misapprehended the nature of that testimony. Far from relying simply on past observation, Carlson reached his conclusions by applying a process-of-elimination, rule-of-thumb *methodology*. The *Daubert* criteria accurately probed the reliability of that methodology and established, as the district court correctly held, that Carlson's testimony was too speculative and attenuated to the facts on which it was based to be admissible.

III. The Eleventh Circuit was equally mistaken in suggesting that the *Daubert* factors are limited to "scientific" expert testimony. This limitation finds no support in the language of Rule 702 or in *Daubert*. To the contrary, Rule 702's text indicates that the types of knowledge about which a qualified expert may testify are broad and overlapping. Moreover, because there is no bright line separating "scientific" and "nonscientific" evidence, the Eleventh Circuit's approach would force trial judges to engage in classifications that that they are ill-suited to make.

Contrary to the Eleventh Circuit's suggestion, the *Daubert* factors are flexible and adaptable to many different areas of expertise. As applied in this case, the factors provided the district court with valuable information needed to determine whether Carlson's proffered testimony was truly "reliable" knowledge or, rather, unsupported speculation. Finally, even if the *Daubert* factors apply only to "scientific" experts, they were properly applied to Carlson because (1) the district court found that his testimony was based in scientific knowledge, and that finding was not an abuse of discretion, and (2) Carlson's tire failure analysis is closely akin to the scientific method and properly categorized as based in scientific knowledge for *Daubert* purposes.

IV. If this Court rejects the Eleventh Circuit's reasoning, there is no reason to remand. Instead, the Court should affirm the district court's order excluding Carlson's testimony. The district court did not abuse its discretion in concluding, on the basis of the

Daubert factors as well as many other considerations, that Carlson's testimony was unreliable and, hence, inadmissible.

ARGUMENT

This product liability action centers on whether a five-year-old tire — which had a bald spot, little remaining tread, and two puncture holes that had been improperly repaired — failed at the end of a cross-country trip because the tire had been abused or instead because the tire was defective. Although there was ample evidence of abuse, there was *no* affirmative evidence of a defect. The plaintiffs sought to bridge that evidentiary gap through the "expert" testimony of a professional witness and "tire failure analyst," who claimed, "[a]fter years of looking at the mangled carcesses of blown-out tires," that he could "identify telltale markings revealing whether a tire failed because of abuse or defect." JA 102.

After examining photographs of the tire rather than the tire itself, and in language adopted verbatim from his employer, Carlson predictably determined that the tire failed because of a defect (although he could not say whether it was a design or a manufacturing flaw). Carlson arrived at this conclusion through use of a special methodology, which included a "rule of thumb" he invented for evaluating (and dismissing) the copious evidence of abuse and a strategy of deliberately ignoring all available evidence that might have disproved the existence of a defect. The district court properly excluded Carlson's testimony as unreliable.

I. THE TRIAL JUDGE'S "GATEKEEPING" OBLIGATION UNDER RULE 702 AND *DAUBERT* EXTENDS TO ALL EXPERT TESTIMONY AND IS VITALLY IMPORTANT TO THE PROPER ADMINISTRATION OF JUSTICE

The starting point for any discussion of the admissibility of expert testimony in the federal courts is Rule 702 and this Court's decision interpreting that rule in *Daubert* v. *Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993). As the language of Rule 702 and *Daubert* make clear, the trial judge's "gatekeeper" role — which is vital to screening out invalid and unreliable expert testimony and thus to ensuring the integrity of federal litigation — does not vary depending on the nature of expert testimony. The

duty to ensure that an expert is properly qualified and that expert testimony is both reliable and relevant applies with equal force to every kind of expert witness. Moreover, the factors that this Court identified in *Daubert* are especially probative of the reliability of expert testimony and thus provide essential guidance to trial judges in their task of differentiating expert knowledge from rank speculation.

A. Under Rule 702 And *Daubert*, Trial Judges Must Evaluate The Reliability Of All Expert Testimony

Like other rules of evidence applicable to experts, Rule 702 applies without qualification or exception to *all* expert testimony:

> If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise.

FRE 702; see also FRE 703 (imposing requirements on bases of opinion testimony by all expert witnesses); FRE 104(a) (hearing procedure applicable to all experts). Under the plain terms of Rule 702, all expert witnesses must be "qualified," must base their testimony on "knowledge," and must offer testimony that "assist[s] the trier of fact." The fact that the "knowledge" referred to in Rule 702 may be "scientific," "technical," or any other form of "specialized" knowledge does not diminish the baseline requirement that *all* expert testimony be rooted in some form of knowledge.

In *Daubert*, this Court shed further light on the language of Rule 702. The Court explained that a trial judge's "gatekeeping responsibility" under Rule 702 includes ensuring that "*any and all*" scientific testimony or evidence admitted is "not only *relevant*, but *reliable*." 509 U.S. at 589 (emphasis added).[9] The Court derived

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[9] The Court was unanimous in recognizing a "gatekeeping" role for federal district judges under Rule 702. See 509 U.S. at 589 & n.7 (Rule 702 "clearly contemplates some degree of regulation of the subjects and theories about which an expert may testify"); *id.* at 597 (referring to "gatekeeper role"); *id.* at 600 (Rehnquist, C.J., joined by Stevens, J., concurring in part and dissenting in part) ("I do not doubt that Rule 702

this obligation from the language of Rule 702, which demonstrates that an expert opinion must be founded upon "knowledge." "[T]he word 'knowledge,'" the Court explained, "connotes more than subjective belief or unsupported speculation" and signifies "any body of known facts or * * * any body of ideas inferred from such facts or accepted as truth *on good grounds*." 509 U.S. at 590 (emphasis added) (internal quotations omitted).

The Court also found support for the reliability requirement in Rule 703, which regulates the "bases of opinion testimony by experts." Under Rule 703, an expert, in forming an opinion, may rely on "facts or data" that "are not based on firsthand knowledge or observation" so long as the "facts or data" are "of a type reasonably relied upon by experts in the particular field in forming opinions or inferences upon the subject." See *Daubert*, 509 U.S. at 592. "[T]his relaxation of the usual requirement of firsthand knowledge," the Court explained, "is premised on an assumption that the expert's opinion will have a *reliable basis* in the knowledge and experience of his discipline." *Ibid.* (emphasis added).

It would be inconsistent with this Court's reasoning in *Daubert*, we submit, to recognize an exception to the district court's "gatekeeper" obligation for certain categories of expert testimony. The requirement of evidentiary reliability is derived from the word "knowledge," which (like other aspects of Rule 702) applies to every kind of expert testimony. Nor has this Court characterized its decision in *Daubert* as limited to "scientific" experts. See *United States* v. *Scheffer*, 118 S. Ct. 1261, 1266 n.7 (1998) ("In *Daubert*[], * * * we held * * * that expert testimony could be admitted if the district court deemed it both relevant and reliable"). The courts of appeals have also recognized that *Daubert*'s "language relative to the 'gatekeeper' function of federal judges is applicable to all expert testimony offered under Rule 702." *Berry*, 25 F.3d at 1350; see also *Watkins* v. *Telsmith, Inc.*, 121 F.3d 984, 990-92 (5th Cir. 1997). Commentators have reached the same conclusion. See EXPERT EVIDENCE: A PRACTITIONER'S GUIDE TO LAW, SCIENCE, AND THE FJC MANUAL 47 &

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confides to the judge some gatekeeping responsibility in deciding questions of the admissibility of proffered expert testimony.").

n.159 (Black & Lee, eds. 1997) (citing numerous articles). And so has the Advisory Committee on Evidence Rules, which recently published proposed changes to Rule 702 that would reaffirm and make explicit this teaching of *Daubert*. See Proposed FRE 702 advisory committee's notes, at 4-5.

Indeed, the Eleventh Circuit paid lip service to this principle, stating that "[u]nder Rule 702, it is the district court's duty to determine if Carlson's testimony is sufficiently reliable and relevant to assist a jury." JA 103. See also Resp. C.A. Br. 16 (acknowledging that unreliable expert testimony is inadmissible). But by holding that the district court could not resort to the factors identified in *Daubert* to probe the reliability of Carlson's testimony, the court of appeals essentially disabled the district court from performing its gatekeeper role in this case.

B. *Joiner* Confirms That Trial Judges Must Conduct Careful Inquiries To Assess The Reliability Of Expert Testimony

This Court recently reaffirmed the stringency of the district court's gatekeeping obligation in *General Electric Co.* v. *Joiner*, 118 S. Ct. 512 (1997). After clarifying that abuse of discretion is the proper standard of appellate review of a trial judge's decision to admit or to exclude expert testimony under *Daubert* and Rule 702, the Court went on to uphold the district court's order of exclusion. In so doing, the Court conducted a rigorous review of the reliability of the proposed expert testimony.

In *Joiner*, the plaintiff claimed that his exposure to polychlorinated biphenyles (PCBs) "promoted" his development of small cell lung cancer. The trial court excluded the causation testimony of plaintiff's experts, which was based on animal studies and on four epidemiological studies, because it "did not rise above 'subjective belief or unsupported speculation.'" 118 S. Ct. at 516 (quoting 864 F. Supp. 1310, 1326 (N.D. Ga. 1994)).

With respect to the animal studies, this Court noted that they "involved infant mice" that had developed cancer after having "massive doses" of PCBs injected directly into their stomachs. 118 S. Ct. at 518. The plaintiff's occupational exposure to PCBs, in contrast, was much less extensive and the type of cancer he developed was different from that suffered by the infant mice. "No

study," moreover, demonstrated either "that adult mice developed cancer after being exposed to PCBs" or that PCBs caused cancer in "any other species." *Ibid.* The Court faulted plaintiff for "fail[ing] to reply to this criticism" by "explaining how and why the experts could have extrapolated their opinions from these seemingly far-removed animal studies." *Ibid.*

Next, this Court carefully examined the four epidemiological studies. The first study had concluded that there were apparently no grounds for associating the higher rate of lung cancer deaths among workers at a factory with exposure to PCBs at the plant. "Given that [the authors] were unwilling to say that PCB exposure had caused cancer among the workers," the Court explained, "their study did not support the experts' conclusion that Joiner's exposure to PCBs caused his death." 118 S. Ct. at 518. The Court noted that the increase in mortality rate from lung cancer reported in the second study was not statistically significant and the study's authors "did not suggest a link between [it] * * * and the exposure to PCBs." *Id.* at 519. "The third and fourth studies were likewise of no help," because the third study made no mention of PCBs and instead involved exposure to a certain mineral oil, and the fourth study involved subjects who "had been exposed to numerous potential carcinogens, including toxic rice oil that they had ingested." *Ibid.*

Based on this inquiry into the reliability and fit of the data relied upon by Joiner's experts, this Court affirmed the district court's exclusion of the experts' testimony. The Court explained:

> [N]othing in either *Daubert* or the Federal Rules of Evidence requires a district court to admit opinion evidence which is connected to existing data only by the *ipse dixit* of the expert. A court may conclude that there is simply too great an analytical gap between the data and the opinion proffered.

118 S. Ct. at 519. *Joiner* thus confirms — and demonstrates by example — the careful scrutiny that must be given to the reliability of expert testimony under Rule 702.

C. A Strong Gatekeeping Role Is Critically Important To The Proper Administration Of Justice And To Fulfilling The Regulatory Objectives Of Tort Law

The district court's gatekeeping role recognized in *Daubert* and exemplified in *Joiner* is vitally important for at least two reasons. First, it serves as a check on the jury's inclination to give great (and sometimes inordinate) weight to the testimony of expert witnesses. By ensuring that all expert testimony presented in a federal courtroom is based on a reliable methodology, district judges reduce the likelihood that verdicts will be based on passion and prejudice and thus help to ensure fair and just outcomes of litigation. Second, in the specific context of product liability litigation, the exercise of a strict gatekeeping role ensures that the regulatory objectives of tort law are satisfied and that the safety of products is not diminished as a result of verdicts based on speculative or unreliable expert testimony concerning product defects.

1. Nearly 100 years ago, in a prescient plea for the use of boards of neutral experts akin to expert panels appointed under present-day Rule 706, Judge Learned Hand discussed at length the "serious practical difficulties" that arise from the use of expert witnesses. Hand, *Historical and Practical Considerations Regarding Expert Testimony*, 15 HARV. L. REV. 40, 50 (1901). Among the "difficulties" that Judge Hand noted were that an expert frequently ends up "confusing" jurors and effectively "take[s] the jury's place if they believe him." *Id.* at 52, 53; see also Richey, *Proposals to Eliminate the Prejudicial Effect of the Use of the Word "Expert" Under the Federal Rules of Evidence in Civil and Criminal Jury Trials*, 154 F.R.D. 537, 541 (1994) (stating that jurors often "abdicate their fact-finding obligation" and simply "adopt[]" the expert's opinion).

The passage of time has only compounded these difficulties. The use of experts has vastly increased in recent years as questions involving "science and technology have intruded into nearly every aspect of * * * litigation." C. WRIGHT & V. GOLD, FEDERAL PRACTICE AND PROCEDURE § 6262, at 181 (1997); see P. HUBER, LIABILITY: THE LEGAL REVOLUTION AND ITS CONSEQUENCES 44 (1988); see also *Joiner*, 118 S. Ct. at 520 (Breyer, J., concurring).

But "because experts often deal with esoteric matters of great complexity," jurors frequently are incapable of "critically evaluating the bases for an expert's testimony" and too often give "unquestioning deference to expert opinion." C. WRIGHT & V. GOLD, *supra*, § 6262, at 182-83. As the Court explained in *Daubert*, expert testimony "'can be both powerful and quite misleading'" because of the jury's "'difficulty in evaluating'" it. 509 U.S. at 595. See *Scheffer*, 118 S. Ct. at 1267 (noting "aura of infallibility attending polygraph evidence" and concern "that juries will give excessive weight to the opinions of a polygrapher, clothed as they are in scientific expertise and at times offering * * * a conclusion about the ultimate issue in the trial"); *Ake* v. *Oklahoma*, 470 U.S. 68, 81 n.7 (1985) ("[T]estimony emanating from the depth and scope of specialized knowledge is very impressive to a jury. The same testimony from another source can have less effect.") (quotation omitted). It is common knowledge, moreover, that jurors "perform much less well when they sit in judgment on technology," P. HUBER, *supra*, at 14; they tend to "get lost in the labyrinth of concepts." *Guillory* v. *Domtar Indus., Inc.*, 95 F.3d 1320, 1331 (5th Cir. 1996).[10]

The "traditional" means of pointing out weaknesses in testimony — "[v]igorous cross-examination [and] presentation of contrary evidence" (*Daubert*, 509 U.S. at 596) — are often ineffective with experts. Because of the expert's "'aura of infallibility,'" even when jurors have a "basis for questioning the expert's reliability, [they] may be disinclined to do so." C. WRIGHT & V. GOLD, *supra*, § 6262, at 183. Jurors typically know little or nothing about the expert's area of expertise — that is why "the expert is necessary at all." Hand, *supra*, at 54 (arguing that jurors are "incompetent" to decide between conflicting expert testimony). Thus, when the subject matter is complex and foreign to them, jurors "could easily miss subtle distinctions revealed on cross-examination and then drown in the untrue and the

[10] Studies have confirmed that jurors routinely believe the testimony of expert witnesses. See *Expert Witnesses Found Credible By Most Jurors*, NATIONAL L.J. Feb. 22, 1993, at S-4 (poll of nearly 800 jurors found that 89% thought testifying experts were credible and 71% said expert testimony made a difference in their verdicts).

unproven." *Guillory*, 95 F.3d at 1331. Neither cross-examination nor rebuttal evidence is helpful if it "goes over the heads of the jurors" and simply "confuse[s] rather than clarif[ies]." C. WRIGHT & V. GOLD, *supra*, § 6262, at 187.

The difficulty that jurors have in evaluating technical evidence, combined with their natural tendency to defer to experts, makes the "'gatekeeper' role of the trial judge in screening [expert] evidence," *Joiner*, 118 S. Ct. at 517, all the more important. This is especially true outside of the realm of "hard science"; the problems posed by experts are only "exacerbated when courts must deal with the even more elusive concept of nonscientific expert testimony." *Berry*, 25 F.3d at 1349. Firm judicial control is essential to ensure that juries hear only expert testimony that has sufficient indicia of reliability. Otherwise, jurors will continue to struggle with attempting to distinguish between "charlatans and Nobel Prize winners," *Richey*, 154 F.R.D. at 547, a task for which laymen are singularly ill-equipped.

2. A strong gatekeeping role is especially significant in product liability litigation. As this Court has repeatedly recognized, jury verdicts based on tort law impose requirements on manufacturers no less than do statutes, regulations or other positive law. See *Cipollone* v. *Liggett Group, Inc.*, 505 U.S. 504, 521-22 (1992) (plurality); *id.* at 548 (Scalia, J., joined by Thomas, J., concurring in the judgment in part and dissenting in part). In fact, "[t]he obligation to pay compensation can be, indeed is designed to be, a potent method of governing conduct and controlling policy." *San Diego Bldg. Trades Council* v. *Garmon*, 359 U.S. 236, 247 (1959). A manufacturer that fails to redesign a product following a jury's finding that the product is defectively designed risks additional lawsuits, including liability for punitive damages.

In view of the obvious regulatory effect of jury verdicts, and tort law's central objective of ensuring the safety of consumer products, the gatekeeping role of trial judges is critically important in cases raising design defect claims. As Justice Breyer observed in *Joiner*, because "modern life, including good health as well as economic well-being, depends upon the use of artificial or manufactured substances," it may "prove particularly important to see that judges fulfill their *Daubert* gatekeeping function, so that they help

assure that the powerful engine of tort liability, which can generate strong financial incentives to reduce, or to eliminate, production, points towards the right substances and does not destroy the wrong ones." 118 S. Ct. at 520 (Breyer, J., concurring). Proper gatekeeping also will ensure that engineers who offer testimony about design choices in the courtroom bring to bear the same considerations and methods they use outside the courtroom (such as an assessment of other risks that would be created by alternative designs). See, *e.g.*, *Bammerlin* v. *Navistar Int'l Transp. Corp.*, 30 F.3d 898, 901 (7th Cir. 1994) (Easterbrook, J.).

3. As Justice Breyer observed in *Joiner*, the gatekeeping role required by *Daubert* "will sometimes ask judges to make subtle and sophisticated determinations about scientific methodology and its relation to the conclusions an expert witness seeks to offer," even though "judges are not scientists and do not have the scientific training that can facilitate the making of such decisions." 118 S. Ct. at 520 (Breyer, J., concurring). Yet "neither the difficulty of the task nor any comparative lack of expertise can excuse the judge from exercising the 'gatekeeper' duties that the Federal Rules impose." *Ibid.* The Federal Rules of Evidence provide a sensible solution to this problem, by requiring the party offering expert testimony to prove that the basic preconditions to admissibility are satisfied. *Bourjaily* v. *United States*, 483 U.S. 171, 175-76 (1987). Thus, the proponent of expert testimony must demonstrate that the expert's methodology is reliable under *Daubert*.

Respondents failed to carry that burden in this case, as the district court correctly concluded. Nevertheless, the Eleventh Circuit held that the district court erred in examining the reliability of the testimony of respondents' expert under *Daubert* for two reasons: (1) Carlson's testimony was based on his "experience"; and (2) *Daubert* applies only to "scientific" expert testimony. As we next explain, both of those reasons are incorrect.

II. THE ELEVENTH CIRCUIT ERRED IN CONCLUDING THAT THE *DAUBERT* FACTORS WERE INAPPLICABLE TO CARLSON'S TESTIMONY BECAUSE HE PURPORTED TO RELY SOLELY ON HIS "EXPERIENCE"

In this case, the Eleventh Circuit held that it was error for the district court to consider *any* of the *Daubert* factors in evaluating the reliability of Carlson's testimony, because Carlson purported to base his opinion on "skill- or experience-based observation" rather than upon "the application of scientific principles." JA 100. In drawing this distinction, the court of appeals relied on a "beekeeper" analogy set forth in *Berry*, 25 F.3d at 1349-50:

> [I]f one wanted to explain to a jury how a bumblebee is able to fly, an aeronautical engineer might be a helpful witness. Since flight principles have some universality, the expert could apply general principles to the case of the bumblebee. Conceivably, even if he had never seen a bumblebee, he still would be qualified to testify, so long as he is familiar with its component parts. On the other hand, if one wanted to prove that bumblebees always take off into the wind, a beekeeper with no scientific training at all would be an acceptable witness if a proper foundation were laid for his conclusions. The foundation would not relate to his formal training, but to his firsthand observations. In other words, the beekeeper does not know any more about flight principles than the jurors, but he has seen a lot more bumblebees than they have.

The Eleventh Circuit acknowledged that it was "no doubt correct" that "the laws of physics and chemistry are implicated in the failure of the Carmichaels' tire." Nonetheless, the court concluded that Carlson's testimony was properly categorized as "experience-based" because he "makes no pretense of basing his opinion on any scientific theory of physics or chemistry" but rather "rests his opinion on his experience in analyzing failed tires." JA 102. The court of appeals explained (JA 102):

> After years of looking at the mangled carcasses of blown-out tires, Carlson claims that he can identify telltale markings revealing whether a tire failed because of abuse or defect. Like a beekeeper who claims to have learned through years of

> observation that his charges always take flight into the wind, Carlson maintains that his experiences in analyzing tires have taught him what "bead grooves" and "sidewall deterioration" indicate as to the cause of a tire's failure. Indeed, Carlson asserts no knowledge of the physics or chemistry that might explain why the Carmichaels' tire failed.

Expert testimony based upon "experience," the Eleventh Circuit concluded, should ordinarily be admitted. JA 101.

This analysis is mistaken for at least two interrelated reasons. *First*, the Eleventh Circuit applied too broad and manipulable a concept of "experience-based" testimony. Although the court of appeals' opinion is no model of clarity in this regard, the court stated that an expert's mere invocation of his professional "experience" might suffice to bypass the *Daubert* inquiry. JA 102. That approach, we submit, would eviscerate Rule 702 because it would allow experts to avoid scrutiny under *Daubert* simply by claiming to be testifying based on their "experience." If expert testimony based on "experience" is to be evaluated differently, that should be because the testimony itself (rather than the expert's characterization of it) is based on "experience" in the narrow sense of *past firsthand observation*. *Second*, and relatedly, Carlson's testimony was *not* based solely upon "skill- or experience-based *observation*." In reaching his conclusions about the cause of the Carmichaels' tire failure, Carlson in fact relied upon a detailed methodology — a methodology, we submit, whose reliability can and should be evaluated under the *Daubert* factors.

A. The *Daubert* Factors Are Not Rendered Inapplicable Merely Because An Expert Purports To Rely On "Experience" As The Basis For An Expert Opinion

Although the Eleventh Circuit at one point suggested that the *Daubert* factors were inapplicable because Carlson's testimony was based on "skill- or experience-based *observation*" (JA 100 (emphasis added)), it also stated that this result obtained because Carlson's testimony was based upon his "*personal experience* and skill with failed tires." JA 101. The Eleventh Circuit also attached significance to the fact that Carlson himself characterized the basis for his testimony as his "experience" (and disavowed any reliance on scientific knowledge.) JA 101. Even if the *Daubert* factors might

not all apply to certain types of experience-based expert testimony (an issue that need not be decided in this case), these broader suggestions in the Eleventh Circuit's opinion are manifestly incorrect.[11]

Rule 702 mentions "experience" as one of several ways to *qualify* as an expert. FRE 702 ("a witness *qualified* as an expert by knowledge, skill, *experience*, training, or education") (emphasis added). Whether an expert witness' expertise is acquired through "experience, training, or education," or is merely possessed by virtue of "knowledge" or "skill," in no way eliminates the fundamental Rule 702 requirement that the expert testify about some form of "knowledge." Because the reliability requirement articulated in *Daubert* stems from the word "knowledge" in Rule 702, the *source* of the expert's qualifications should not alter the need to demonstrate that his testimony is reliable.

The ordinary meaning of the word "experience," moreover, is ambiguous, reflecting a range of meanings. It is defined as:

> The process or fact of personally observing, encountering, or undergoing something; as, to have *experience* in teaching; * * * knowledge or practical wisdom gained from what one has observed, encountered, or undergone * * *.

NEW WEBSTER'S DICTIONARY OF THE ENGLISH LANGUAGE 346 (1984) (emphasis in original). Thus, in ordinary parlance, "experience" can mean one's past personal observation, or it can signify more generally all that one has personally "encountered" or "undergone" in life. Yet "experience" in the latter sense can be invoked by *any* type of expert witness, including an expert whose testimony is indisputably premised on the scientific method.

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[11] The Eleventh Circuit continues to adhere to this mistaken view. In *Michigan Millers Mut. Ins. Corp.* v. *Benfield*, 140 F.3d 915, 920 (1998), the Eleventh Circuit held that whether the *Daubert* factors are applicable to an expert hinges on "the manner in which th[e] expert's testimony [i]s presented to the jury" by a party's lawyers. See also *id.* at 920 n.15 (explaining that it is not "unfair to hold Millers' counsel to their decision to introduce their expert's testimony as *scientific expert testimony* rather than *experiential, non-scientific expert* testimony") (emphasis added).

Scientists, after all, accumulate "experience" with their methodologies and disciplines over time.[12]

Given the expansive meaning of 'experience," the Eleventh Circuit was wrong to suggest that an expert could avoid scrutiny under the *Daubert* factors merely by alleging that his testimony is based on "experience." That approach would eviscerate Rule 702 and lead to patently absurd results. See *Watkins*, 121 F.3d at 991 ("[I]t seems exactly backwards that experts who purport to rely on general engineering principles and practical experience might escape screening by the district court simply by stating that their conclusions were not reached by any particular method or technique."). Indeed, it is difficult to imagine *any* kind of expertise that could not be recast as experienced-based. Thus, a DNA expert could avoid criticisms of his methodology by explaining that his opinion is in fact based on his "experience" in identifying genetic linkages; or a damages expert in a contract case could present an opinion that departs substantially from the prevailing standards of property valuation by nebulously invoking his "experience" in "the real estate market"; or a medical doctor could opine that a person's condition was caused by a certain chemical by alluding to his

[12] In its proposed amendments to Rule 701, the Rules Committee has recognized that parties and experts may attempt to escape Rule 702's requirements by recharacterizing expert opinions as lay testimony under Rule 701:

> If the witness is not testifying as an expert, the witness' testimony in the form of opinions or inferences is limited to those opinions or inferences which (a) are rationally based on the perception of the witness, (b) are helpful to a clear understanding of the witness' testimony or the determination of a fact in issue, and (c) are not based on scientific, technical or other specialized knowledge.

Proposed FRE 701. The Advisory Committee Notes state that these proposed amendments are intended "to eliminate the risk that the reliability requirements set forth in Rule 702 will be evaded through the simple expedient of proffering an expert in lay witness clothing." Proposed FRE 701 advisory committee's note, at 2. Indeed, testimony based on accumulated firsthand observations, like the beekeeper's, is nearly indistinguishable from such recast "lay" witness testimony.

"experience" viewing hundreds of patients with similar conditions. That cannot be the law.

In addition to creating a ready means of bypassing scrutiny under the *Daubert* factors, a broad exemption of "experience-based" testimony is in severe tension with this Court's decision in *Joiner*. "[N]othing in either *Daubert* or the Federal Rules of Evidence," the Court explained in *Joiner*, "requires a district court to admit opinion evidence which is connected to existing data only by the *ipse dixit* of the expert." 118 S. Ct. at 519. Yet when experts are permitted to forgo an examination of how they connect the information they rely upon to their conclusions merely by invoking their "experience," the court in essence must rely on the expert's say-so. It cannot be that *Daubert* or *Joiner* would have come out differently if the experts there had merely claimed that their conclusions were drawn from their "experience."

The flaws in a broad "experience" exception to *Daubert* are particularly apparent in product liability cases. In *Compton* v. *Subaru of America, Inc.*, 82 F.3d 1513 (10th Cir. 1996), for example, an engineer was allowed to testify that a car's roof should have been designed to meet a strength standard that the district court described as "preposterous" and "more applicable to a Sherman tank than to any vehicle which the ordinary consumer would drive." *Id.* at 1516; No. 96-645 Pet. 6. The expert was permitted to offer that opinion based on his "experience," even though he failed to consider whether the increased weight or strength of the roof would have rendered the vehicle unstable, reduced the operator's field of vision, or caused more severe injuries at lower speeds — all factors that an engineer actually designing a roof would have assessed and tested. No. 96-645 Pet. 14, 26-27. But an engineer's "experience" and "training" establish expert status, if at all, only because the engineer has applied reliable engineering methods to a particular issue based on facts presented in the case. To allow an engineer to testify about manufacturing or design defects without employing appropriate

engineering techniques leaves "too great an analytical gap" for such testimony to be submitted to a jury. See *Joiner*, 522 U.S. at 519.[13]

In fairness to the Eleventh Circuit, its opinion may reflect a narrower conception of "experience-based" expert testimony. Thus, the court referred to Carlson's "skill- or experience-based *observation*" (JA 100 (emphasis added)), and it likened Carlson to several hypothetical "experts" whose expertise is based on past observations: a beekeeper who has seen many bees take off into the wind; and an auto mechanic who, based on "years of experience with spark plugs," can "identify for a jury burn marks" or other "patterns of normal or abnormal wear on an auto part." JA 100-01 & n.6. "Experience" in this narrower sense signifies *past firsthand observation*, typically of simple phenomena. But if the Eleventh Circuit had this narrower concept of "experience" in mind in ruling that the factors set forth in *Daubert* were inapposite in this case, it seriously misapprehended Carlson's testimony, as we next explain.

Indeed, the very ambiguity in the concept of "experience" provides yet another reason why endorsement of a special approach to gauging the reliability of experience-based testimony would be exceedingly ill-advised. Even if some types of "experiential" expertise might warrant special rules, the courts no doubt would be asked in virtually every case to place the expert in the category not subject to the *Daubert* factors. Given the potentially broad meaning of "experience," courts would have to face this threshold issue in many if not most cases. This Court should not countenance that result.

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[13] Commentators have sharply criticized the decision in *Compton*. See, *e.g.*, Schofield, *A Misapplication of* Daubert: Compton v. Subaru of America *Opens the Gate For Unreliable and Irrelevant Expert Testimony*, 1997 B.Y.U.L REV. 489, 508 (*Compton* permits litigants to "circumvent" *Daubert*); Hoenig, *New Cases on Experts After "Daubert,"* N.Y. LAW J., May 13, 1996, at 6 (*Compton* "creates an escape hatch by which *Daubert*'s reliability factors can be bypassed").

B. Carlson's Testimony Was Not Based Solely On His Past Observations, But Rather On A Methodology That Was Susceptible To Evaluation Under The *Daubert* Factors

Contrary to the Eleventh Circuit's suggestion, Carlson did not rely solely upon "skill- or experience-based observation" (JA 100) in concluding that the cause of the tire's failure was a manufacturing or design defect. To be sure, Carlson did observe the tire (or more precisely, photographs of the tire) before offering his causation opinion. And he claimed to have looked at the photographs for various signs of overdeflection. But to leap from those observations to his conclusion that the tire failed *due to a defect*, Carlson resorted to a reasoning process. That methodology can and should be evaluated for reliability under the *Daubert* factors.

1. As previously explained in greater detail (at 7-11), Carlson's usual approach for discerning the cause of a tire failure involves three steps: (1) a visual and tactile examination of the tire, including, in some cases, decortication (or cutting), x-rays, or a chemical test for butyl contamination; (2) a process of elimination aimed at ruling out the likeliest cause of a separation (abuse) in order the find the existence of a rare cause (defect); and (3) an analysis of the potential affirmative evidence of a defect, including records pertaining to the tire's design, manufacturing, and testing.

Carlson departed significantly from his usual methodology in this case. He skipped the third step altogether. With regard to the first step, Carlson did not perform a visual or tactile examination of the tire until *after* he reached his conclusions. His examination of the tire was limited to a total of approximately one hour spent on the morning of his deposition, during which he examined all four of the minivan's tires. He did not cut or test the tire even though he admitted that those procedures would have provided useful data.

Based solely on information gleaned from the photographs, Carlson applied the truncated methodology reflected in his second step. That step included several smaller steps. First, it involved a subjective assessment of whether four "signs of overdeflection" exist: (1) greater tread wear on the shoulder than in the center of the tire; (2) deterioration and discoloration of the sidewall; (3) abnormal grooving of the "bead" of the tire; and (4) impressions on the rim flange. JA 34, 210-13, 276-78. Next, Carlson applied

his "two-factor" rule of thumb, which he invented, to determine whether the tire was overdeflected. JA 222-23, 232-33, 391-92. As the district court explained, "[w]hen Carlson fails to find sufficient evidence of two of these four indicators in a tire, he rules out overdeflection as a cause of the tire failure and, barring other evidence of abuse, concludes that the loss of adhesion was prompted by a manufacturing or design defect." JA 34.

This process-of-elimination method rests on the premise that abuse and defect are the only two possible causes of a separation. But Carlson proceeded through his two-factor rule of thumb to rule out only one type of abuse (overdeflection) while ignoring all other potential categories of abuse (such as punctures, excessive speed, impact damage, or certain steering maneuvers) as the cause of the separation. JA 365, 369-71. For example, Carlson failed to eliminate the second puncture (which he did not notice in the photographs), even though that puncture was located where the separation began and he admitted that it is "[n]ot uncommon" for a puncture to cause a separation. JA 378. Carlson also "observed some evidence of uneven tread wear, sidewall deterioration, abnormal bead grooving, and rim flange impressions; however, he found that the evidence with respect to each factor was either insufficient to demonstrate overdeflection or was attributable to causes other than overdeflection." JA 35 (footnote omitted). Although Carlson purported to rely on his "experience" in analyzing other tires, he did not know whether he has ever been right or wrong in performing such an analysis. JA 40.

As the foregoing description of Carlson's methodology makes clear, Carlson hardly engaged in observing a simple phenomenon, such as whether bumblebees always take flight into the wind. Nor did he draw only upon his past "experience" in the sense of firsthand observations. Carlson's conclusions necessarily rested on his subjective interpretation of the evidence based on photographs of the tire and his "rule of thumb" that overdeflection is not the cause of tire failure unless sufficient evidence of two of the four indicia of abuse are present. Carlson did not testify merely about *what* he observed in the failed tire but rather about *how and why* the tire failed. It is for the most part undisputed what happened: the tire separated. Carlson's testimony addressed *why* this separation occurred: *how* was it caused? And Carlson formulated his

opinion about these questions through his process-of-elimination and rule-of-thumb methodology described above.

There is no reason why the methodology Carlson applied in this case cannot and should not be evaluated under the *Daubert* factors. Those factors are the right questions to ask concerning the reliability of such a methodology. What is the basis for Carlson's subjective explanation that the evidence of overdeflection on the tire is insufficient? Is there any support for his "two-factor" rule of thumb? Has it been tested? Is it accepted in the industry? Why isn't one indication of overdeflection enough? Why isn't some evidence of all four factors (as occurred here) enough? More specifically, the *Daubert* factors focus the court's attention on whether Carlson's methodology has been or can be tested, accurately identifies the cause of tire failures (error rate), has any support in published or peer-reviewed literature, and has been accepted within the relevant expert discipline. These factors are highly probative of the central issue under Rule 702: whether Carlson was testifying to "knowledge" or, rather, to unsupported and speculative opinion.

Because respondents failed to demonstrate reliability under these or other factors, the district court had little assurance that Carlson's technique would produce reliable results. For all the district court knew, the separation in the failed tire might have been caused by abuse even if *none* of the markings discussed by Carlson was present on the tire. For all the district court knew, a tire with only one of the markings (or as Carlson described this tire, *some* evidence of all *four* markings) might have failed due to abuse. In addition, Carlson's process-of-elimination method was logically flawed because he failed to eliminate all possible causes of abuse. See, *e.g.*, *Claar* v. *Burlington N.R.R.. Co.*, 29 F.3d 499, 502 (9th Cir. 1994) (experts failed to rule out other causes of plaintiffs' injuries); *Raskin* v. *Wyatt* Co., 125 F.3d 55, 67-68 (2d Cir. 1997) (expert testimony excluded because it failed to adjust for other causes); cf. *Sheehan* v. *Daily Racing Form, Inc.*, 104 F.3d 940, 942 (7th Cir. 1997) (expert's failure to control for other variables rendered methodology unreliable). He failed to explain how he concluded that the second puncture — the one he missed seeing in the photographs — did not lead to the separation and resulting failure. And he could not have ruled out impact, speed, and

steering as causes of the separation because he did not know the service history of the tire and did not read any of the depositions.

Notably, although respondents themselves argued in the courts below that they were not required to satisfy the *Daubert* factors (because the *Daubert* decision was limited to scientific testimony, and Carlson's analysis was technical), they did not contend that the *Daubert* factors would not inform the district court about the reliability of Carlson's methodology. To the contrary, respondents maintained that Carlson's testimony *satisfied* the *Daubert* factors. They contended that Carlson "employs a 'scientific technique' to determine the cause of tire failure" (JA 64); that his methodology was "testable and refutable" because "the premises, empirical data, and logical method" underlying his opinion were "easily understood and examined by opposing experts, opposing counsel, and jurors" (JA 70-71); that Carlson's testimony had been "exposed to peer review" both "during [his] years of experience at Michelin" and, more recently, "not in the quiet pages of scholarly journals, but in the fire of litigation" (JA 71); and that Carlson's technique was "commonly accepted in the relevant scientific community" of tire failure analysts because it had been used by other expert witnesses (JA 71). In light of these submissions, respondents can hardly suggest that the *Daubert* factors would not assist the trial judge in evaluating the reliability of Carlson's methodology.[14]

In sum, the Eleventh Circuit plainly erred insofar as it concluded that Carlson's testimony, like the beekeeper's but unlike the aeronautical engineer's, was based solely upon his "experience." Carlson's "expert" testimony was based not on simple observations but on a developed technique in which he made empirical observations, analyzed and interpreted those observations,

[14] Surely, if the evidence concerning Carlson's methodology indicated the converse of what it in fact did, it would have been error for the district court not to consider that Carlson's methodology was accurate, had been tested, was accepted by the industry, and had been described and endorsed in published writings. The fact that Carlson's methodology flunked each of these criteria does not mean that the court erred in applying them; it means only that the factors weighed against admission of Carlson's testimony.

and reached conclusions by resort to his process-of-elimination and rule-of-thumb methodology. Carlson's testimony about "why" and "how" the tire failed is utterly unlike the testimony about "what" bees do. There is no reason why the *Daubert* criteria should have to be ignored in evaluating the reliability of Carlson's technique.

III. THE ELEVENTH CIRCUIT WAS EQUALLY MISTAKEN IN CONCLUDING THAT THE APPLICABILITY OF THE *DAUBERT* FACTORS HINGES ON WHETHER AN EXPERT'S TESTIMONY IS "SCIENTIFIC"

Not only did the Eleventh Circuit err in accepting Carlson's claim that his testimony was experiential, but it also went astray in finding that the approach to assessing methodological reliability outlined in *Daubert* is restricted to experts who are "scientific." The only reason offered for that far-reaching proposition was that this Court, in a footnote in *Daubert* itself, "explicitly limited its holding to cover only the 'scientific context.'" JA 99 (citing *Daubert*, 509 U.S. at 590 n.8). But the fact that the Court dealt only with "scientific" expert testimony in *Daubert* does not explain why the factors mentioned in that opinion for assessing reliability should not apply to "nonscientific" expert testimony. On that critical issue, the Eleventh Circuit was completely silent.

Under the Eleventh Circuit's approach, a district court would be required to consider whether an expert's methodology can be (or has been) tested, has a high known or potential error rate, has been subjected to the criticism of other experts through peer review or publication, is subject to "standards controlling the technique's operation," and is generally accepted within the relevant community of experts *only* when evaluating "scientific" evidence. On the other hand, when assessing the reliability of "nonscientific" expert evidence under Rule 702, a court could ignore the four *Daubert* factors — or (as in this case) would commit reversible error by applying them. This rigid, categorical approach is contrary to this Court's emphasis on flexibility in *Daubert* and lacks any support in the text of Rule 702. It would spawn wasteful satellite litigation by requiring trial judges to decide at the threshold questions of proper categorization that they are ill-equipped to resolve.

A. The Court Of Appeals' Rigid, Categorical Approach Lacks Support In The Text Of Rule 702 And Is Unwise

Rule 702 does not envision hermetically distinct categories of "scientific," "technical," and "specialized" expertise. The drafters' use of the residual adjective "other specialized" makes clear that both "scientific" and "technical" knowledge are themselves *types* of specialized knowledge. In addition, Rule 702 makes no mention of "scientific" and "technical" *experts*. It refers, instead, to "scientific" and "technical" *knowledge*. This is important because many types of experts testify on the basis of a *combination* of scientific, technical, and other specialized *knowledge*.

In other words, Rule 702's use of the adjectives "scientific, technical, and other specialized" to describe "knowledge" amounts to nothing more than "general descriptive language covering the sort of expert testimony which courts have customarily received," not an expectation that types of experts would be "broken down into numerous subspecies of expertise." *Daubert*, 509 U.S. at 600 (Rehnquist, C.J., joined by Stevens, J., concurring in part and dissenting in part). The language of Rule 702 thus lends no support to the Eleventh Circuit's rigid approach to evaluating the methodological reliability of expert testimony. See C. WRIGHT & V. GOLD, *supra*, § 6266, at 285 ("[n]othing in the language of the Rule suggests that scientific expert testimony should be treated differently from other expert testimony"); American College of Trial Lawyers, *Standards and Procedures for Determining the Admissibility of Expert Testimony After* Daubert, 157 F.R.D. 571, 579 (1994) ("Whether the testimony concerns economic principles, accounting standards, property valuation or other nonscientific subjects, it should be evaluated by reference to the 'knowledge and experience' of that particular field.").

The Eleventh Circuit's categorical approach is also at odds with the flexibility emphasized by this Court in *Daubert*. See 509 U.S. at 594 ("The inquiry envisioned by Rule 702 is, we emphasize, a flexible one.") (footnote omitted). In *Daubert* the Court left open the question whether other factors might be applied by courts, even in cases where experts testify based on "scientific" knowledge. *Id.* at 594 n.12; see also *id.* at 593 ("Many factors will bear on the inquiry, and we do not presume to set out a definitive

checklist."). The Court made clear as well that all of the *Daubert* factors need not be applied to every expert testifying based on "scientific" knowledge. The "publication or peer review" factor, for example, may not be probative of reliability where the technique or principle at issue is "too particularized, too new, or of too limited interest to be published." *Id.* at 593.

The Eleventh Circuit's approach has yet another shortcoming: it is difficult to administer and will lead to substantial collateral litigation. The line between "scientific" and "technical" knowledge — like the line between "science" and "nonscience" (or "experience") — is far from clear, assuming that such a line even exists. J. ADAMS, FLYING BUTTRESSES, ENTROPY, AND O-RINGS 132 (1991) ("Science, research, and engineering are part of a continuum.").[15] Many experts rely on scientific, technical *and* other specialized knowledge for their opinions. The court of appeals' rule would necessarily embroil the district courts in complex and uncertain threshold inquiries into the proper categorization of expert testimony. Yet, as two members of the Court observed in *Daubert*, questions such as the proper "definitions of scientific knowledge" are "matters far afield from the expertise of judges." *Daubert*, 509 U.S. at 599 (opinion of Rehnquist, C.J., joined by Stevens, J.). The Eleventh Circuit's approach thus would force trial judges to resolve — potentially at the outset of every Rule 702 motion challenging an expert witness' reliability — issues that most judges are ill-suited to decide.

The Eleventh Circuit's approach would also create powerful incentives for litigants to characterize expert testimony as "non-scientific" rather than "scientific," just as the respondents sought to do in this case. For example,

> a clinical psychologist seeking to testify on "child abuse accommodation syndrome," a subject most jurisdictions correctly exclude as insufficiently supported by sound scientific research, could claim to be resting on "technical or other specialized knowledge." Hence, pseudoscientists could draw

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[15] In the court below, respondents characterized "physicians, physicists, and architects" all as "scientific" witnesses. Resp. C.A. Br. 16.

> the perverse conclusion from *Daubert* that the key to admission is to remain unscientific in order to avoid standards they find difficult to meet.

Faigman, *Making the Law Safe for Science: A Proposed Rule for the Admission of Expert Testimony*, 35 WASHBURN L.J. 401, 422 (1996) (footnote omitted). The test endorsed by the court below thus threatens to unleash a "race to the bottom" that is the very antithesis of the central message of *Daubert*.

B. The *Daubert* Factors Serve As General Indicia Of Evidentiary Reliability, And Can Be Adapted To Fit Specific Disciplines And Particular Experts

The Eleventh Circuit's categorical approach is not only unsupported in Rule 702, contrary to *Daubert*, and a recipe for wasteful and complex satellite ligitation; its worst flaw is that it is wholly unnecessary. The court of appeals evidently failed to grasp that the *Daubert* factors are themselves flexible and adaptable to different types of expertise. Properly understood and applied, the factors serve as powerful general indicia of reliability for many types of expert testimony, including testimony based on technical or nonscientific knowledge. The Eleventh Circuit's holding that the factors cannot be considered for entire categories of experts will deprive trial judges of highly useful information and undermine the accuracy of reliability determinations made under Rule 702.

1. *Testing*. The testing factor is aimed at determining whether a methodology is susceptible to substantiation or objective validation. If a methodology is incapable of being tested, then it is subjective in nature; and everything else being equal, a subjective and unsubstantiated technique should be regarded as less reliable than a technique capable of being tested. If a methodology has been tested, those tests are likely to have yielded useful information concerning the method's reliability.

The lower courts have shown considerable flexibility in applying the "testing" factor to various types of expert witnesses. Product liability cases provide a good example. In cases alleging defective product design, courts have routinely considered whether the expert has "tested" the alternative design he has endorsed. See, *e.g.*, *Cummins* v. *Lyle Indus.*, 93 F.3d 362, 368-70 (7th Cir. 1996); *Pestel* v. *Vermeer Mfg. Co.*, 64 F.3d 382, 384 (8th Cir. 1995); *Stanczyk* v. *Black & Decker, Inc.*, 836 F. Supp. 565, 566 (N.D. Ill. 1993) (excluding testimony of expert whose redesign of allegedly defectively designed saw would not have permitted saw to perform its intended function).

Use of the "testing" factor reflects a recognition that engineers themselves routinely test their designs to see if they work without impairing the utility of the product. See, *e.g.*, *Cummins*, 93 F.3d at 369 (citing expert witness's admission that "testing is a necessary part of the design process"); *Stancyzk*, 836 F. Supp. at 567 (noting that "the history of engineering and science is filled with finely conceived ideas that are unworkable in practice"). The application of the testing factor to alternative designs often provides the trial judge with data material to the reliability of the expert's testimony.

In this case, respondents' expert avoided any reliability check based on testing of a proposed alternative design by declining to specify whether the "defect" in the failed tire was a design or a manufacturing defect. Nevertheless, the district court did consider whether Carlson's tire failure methodology was susceptible to testing (as well as whether he had employed available tests to ascertain the cause of the tire's failure). The fact that Carlson's method cannot be tested but instead is almost wholly subjective was plainly relevant to the reliability determination in this case.

2. *Publication or Peer Review*. This factor asks whether the witness (or other experts in the field) have endorsed the methodology in a published or peer-reviewed writing. By publishing a methodology in writing, an expert places his reputation on the line and opens up the technique to informed criticism by other experts — criticism that may uncover flaws. If a publication has been peer-reviewed, this provides an even stronger indication of a method's reliability.[16] Moreover, "peer review" can occur inde-

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[16] Peer-reviewed publications exist in a wide array of disciplines, including medicine, economics, psychology, and, of course, engineering. See, *e.g.*, CHEMICAL ENGINEERING JOURNAL, CLINICAL PSYCHOLOGY REVIEW, ECONOMETRICS, INTERNATIONAL JOURNAL OF ENGINEERING SCIENCE, JOURNAL OF AEROSPACE ENGINEERING, JOURNAL OF ENGINEERING MECHANICS, NEW ENGLAND JOURNAL OF MEDICINE.

pendent of the process of publication. See *Ruffin* v. *Shaw Indus., Inc.*, 1998 WL 394992, at *6 (4th Cir. July 16, 1998) (government scientists evaluated competing toxicological studies). Engineers, for example, are "dependent on other people for knowledge, assistance, and feedback" because "[t]he complexity of engineering makes it impossible for any one person to be in control of all necessary information" and engineers "can lose their perspective and become blind to errors" when "solving complicated problems." J. ADAMS, *supra*, at 33. Not surprisingly, engineers place "a large amount of emphasis * * * on independent evaluation" by other engineers to ensure that their analysis is correct. *Ibid.*

3. *Error Rate/Existence or Maintenance of Standards Controlling Methodology*. This factor (which is sometimes characterized as two separate factors) focuses on the accuracy of a technique or methodology and on its compliance with, or adherence to, accepted standards. It can hardly be disputed that if the error or accuracy rate of a technique is known, that information will be highly probative in evaluating reliability. On the other hand, if a technique's accuracy is unknown, this may (all else being equal) count against admissibility because it indicates that the technique is speculative in nature. This Court's statement in *Daubert* that the "potential" rate of error should be considered, moreover, instructs the district courts to examine aspects of the methodology that may render its use susceptible to error.[17]

The existence or maintenance of standards controlling the technique is a factor adaptable to many disciplines. For example, in *Ruffin*, the Fourth Circuit examined whether an expert's methodology was consistent with (1) a protocol established by the American Society for Testing and Materials, and (2) a series of protocols called the "Good Laboratory Practices." 1998 WL 394992, at *6-*7. The expert's failure to adhere to those protocols, the court explained, militated against the admissibility of his testimony. As the Advisory Committee Notes in support of the proposed amendment to Rule 702 make clear, "when an expert

[17] Carlson's methodology is subjective because he does not know whether he has ever done a tire failure analysis correctly. It may well be that Carlson's tire failure analyses have always been wrong.

purports to apply principles and methods consistent with professional standards, and yet reaches a conclusion that other experts in the field would not reach, the trial court may fairly suspect that the principles and methods have not been fairly applied." See Proposed FRE 702 advisory committee's notes, at 4.

Thus, the third *Daubert* factor also applies across numerous areas of expertise. An understanding of a technique's error rate strikes to the heart of this Court's concern in *Daubert*: that expert testimony be reliable, trustworthy, and based on "good grounds." See 509 U.S. at 590. The existence of standards and industry norms, and a requirement that an expert's testimony adhere to such standards or norms, ensures that the expert's testimony has some basis in the processes and procedures of the relevant discipline.

4. *General Acceptance*. Finally, as this Court explained in *Daubert*, "[w]idespread acceptance" of a methdology "can be an important factor in ruling particular evidence admissible" because "a known technique which has been able to attract only minimal support within the community * * * may properly be viewed with skepticism." 509 U.S. at 594 (internal quotations omitted). Although in some cases "general acceptance" can signify a threshold through which novel techniques pass on their way to acceptability (as under the *Frye* test), in other cases the factor can target, more broadly, the extent to which a technique in all of its particulars is used by experts in a certain field.

Not surprisingly, the lower courts have adopted and applied this broader understanding of the "general acceptance" criterion. See, *e.g.*, *United States* v. *Velasquez*, 64 F.3d 844, 851 (3d Cir. 1995) (handwriting expert complied with generally accepted protocol); *United Phosphorus, Ltd.* v. *Midland Fumigant, Inc.*, 173 F.R.D. 675, 683 (D. Kan. 1997) (economist did not apply generally accepted economic approach); *Kurncz* v. *Honda N. Am., Inc.*, 166 F.R.D. 386, 388-89 (W.D. Mich. 1996) (expert's "willingness to pay" model of calculating hedonic damages was not generally accepted). The Seventh Circuit has been especially vigilant in considering whether experts who "testify in court * * * adhere to the same standards of intellectual rigor that are demanded in their professional work." *Rosen* v. *Ciba-Geigy Corp.*, 78 F.3d 316, 318 (1996). Thus, in *Braun* v. *Lorillard Inc.*, 84 F.3d 230

(7th Cir. 1996), the court of appeals excluded an expert's testimony, noting that "one of the abuses" at which *Daubert* is aimed "is the hiring of reputable scientists, impressively credentialed, to testify for a fee to propositions that they have not arrived at through the methods that they use when they are doing their regular professional work rather than being paid to give an opinion helpful to one side in a lawsuit." *Id.* at 235; see also *Frymire-Brinati* v. *KPMG Peat Marwick*, 2 F.3d 183, 186 (7th Cir. 1993) (accounting expert did not use generally accepted cash flow analysis).

The general acceptance factor can be readily — and usefully — applied to all types of experts, including those whose expertise is not based in "scientific" knowledge. For example, real estate appraisers follow certain generally accepted techniques in forming opinions about the value of property. See, *e.g.*, APPRAISAL STANDARDS BOARD, UNIFORM STANDARD OF PROFESSIONAL APPRAISAL PRACTICE (1997). These techniques are bounded by certain rules and standards. See, *e.g.*, *id.* at 13 (Standards Rule 1-4) (describing types of adjustments permissible in conducting "comparable sales" analysis of value of properties). A district court should be able to consider whether an appraiser who proposes to offer testimony in a federal courtroom adheres to standards that are "generally accepted" in his field; the Eleventh Circuit's approach forbidding trial judges from taking this into account if the expert's testimony is "nonscientific" is indefensible.

In sum, this Court in *Daubert* did not restrict the factors that a trial judge may consider in determining the reliability and relevance of expert testimony. The Court made clear that the trial court's gatekeeping analysis is a flexible one, and it set forth a nonexhaustive list of helpful considerations. Since *Daubert*, the courts have interpreted the factors broadly and have adapted them to a wide range of experts in conducting the reliability inquiry.[18] The Eleventh Circuit's decision, which threatens to halt the salutary development of the law in this area, should be rejected.

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[18] See *Sorensen* v. *Shaklee*, 31 F.3d 638, 647 n.15 (8th Cir. 1994) (collecting cases); EXPERT EVIDENCE: A PRACTITIONER'S GUIDE TO LAW, SCIENCE, AND THE FJC MANUAL 48-49 & nn.163-71 (Black & Lee eds. 1997) (same)

C. Even If The *Daubert* Factors Apply Only To Expert Testimony Based On "Scientific" Knowledge, The District Court Did Not Abuse Its Discretion In Applying Them To Carlson

Even if the Court agrees with the Eleventh Circuit's view that the *Daubert* factors apply only to "scientific" experts, there are two reasons why that principle does not assist respondents in this case. First, the district court found that Carlson's testimony was rooted in scientific knowledge. That case- and expert-specific finding is reviewable deferentially under *General Electric Co.* v. *Joiner*, 118 S. Ct. 512 (1997). Given Carlson's extensive reliance on "scientific" knowledge in reaching his opinions, the district court's characterization of Carlson's testimony was hardly an abuse of discretion. Second, even apart from the district court's finding, Carlson's failure analysis testimony is so rooted in scientific concepts and principles that it must be placed in that category of expertise based on "scientific" knowledge.

1. In excluding Carlson's testimony, the district court explained that although respondents "may be correct that [his] testimony does not concern a scientific concept per se," it "certainly is testimony about the application of scientific concepts involved in physics, chemistry, and mechanical engineering." JA 42-43. Because Carlson's testimony "is necessarily grounded in some scientific foundation," the district court was obliged to "consider the legitimacy of both the scientific foundation and the actual application of that foundation employed by Carlson." JA 43. Thus, the court properly rejected respondents' "efforts to recast Carlson's testimony in a 'technical' light." JA 43.

The district court's finding that Carlson's testimony was rooted in scientific knowledge is subject to deferential review under this Court's decision in *Joiner*. The Eleventh Circuit, however, gave no deference whatsoever to that finding. Instead, it stated:

> [I]t *seems apparent to us* that Carlson's testimony is non-scientific. Although [petitioners are] no doubt correct that the laws of physics and chemistry are implicated in the failure of the Carmichaels' tire, Carlson *makes no pretense* of basing his opinion on any scientific theory of physics or chemistry.

JA 102 (emphasis added). The Eleventh Circuit's analysis exceeded the proper bounds of appellate review. In essence, the court of appeals disagreed with the trial court's factual finding (even as it agreed with the basis for that finding). Moreover, the court of appeals was wrong to rely on the witness's *own characterization* of his testimony to trump the district court's findings concerning the actual underpinning of that testimony.

2. The *Daubert* factors were appropriately applied to Carlson's testimony for another reason: tire failure analysis is firmly rooted in scientific knowledge, as several *amicus curiae* briefs explain in detail.[19] "[T]o qualify as 'scientific knowledge,' an inference or assertion must be derived by the scientific method." *Daubert*, 509 U.S. at 590. A proper failure analysis, like virtually all modern engineering, employs a reasoning process that is essentially identical to the scientific method.

"Scientific methodology today is based on generating hypotheses and testing them to see if they can be falsified * * *." *Daubert*, 509 U.S. at 593. "Much of the scientific process is similar to the problem solving done by engineers, which is not surprising since engineering education places heavy emphasis on science." J. ADAMS, *supra*, at 132. Engineers "apply aspects of * * * 'the scientific method'"; they, like scientists, use "theory and experiment in the search of understanding." *Id.* at 40; see H. PETROSKI, TO ENGINEER IS HUMAN: THE ROLE OF FAILURE IN SUCCESSFUL DESIGN 40 (1992) (engineering designs "must be analyzed by the engineer as scientist in as rigorous an application of the scientific method as any scientist must make"). The "scientific-engineering" method "includes an attempt to quantify when possible and to keep accurate records so that experiments can be reproduced and results verified." J. ADAMS, *supra*, at 40

Failure analysis, or "forensic engineering," is a well-recognized discipline within engineering. J. ADAMS, *supra*, at 38; see, *e.g.*, A. VILLEMEUR, RELIABILITY, AVAILABILITY, MAINTAINABILITY AND SAFETY ASSESSMENT (1991) (textbook on techniques of engineering failure analysis). Indeed, failure analysis has been described as being "at the heart of the engineering method." H. PETROSKI, DESIGN PARADIGMS 184 (1994). Failure analysis, like engineering generally, relies on the scientific method of obtaining "knowledge." The American Society of Civil Engineers, for example, publishes guidelines for forensic engineers that describe failure analysis in terms that any scientist would find familiar: the creation of "hypotheses [that] will be proven or disproven, resulting in a failure hypothesis that can be supported by the * * * investigator." TASK COMMITTEE ON GUIDELINES FOR FAILURE INVESTIGATION, GUIDELINES FOR FAILURE INVESTIGATION 157 (1989). A forensic engineer obtains "knowledge" like a scientist; he formulates a hypothesis and measures it against test results and observations.

[19] See, *e.g.*, Brief of the National Academy of Engineering as *Amicus Curiae* in Support of Petitioners 6-18; Brief of the Rubber Manufacturers Association as *Amicus Curiae* in Support of Petitioners 14-19.

An engineer conducting a failure analysis, like a scientist, should "[a]void speculation, rationalization, intuition, and inferences based upon lack of information." C. WITHERELL, MECHANICAL FAILURE AVOIDANCE: STRATEGIES AND TECHNIQUES 55 (1994). To obtain knowledge of how and why things fail requires rigorous application of the scientific method. A decision by this Court that would allow a jury to hear expert forensic engineering testimony that had not been verified through the rigors of the scientific method would permit decisions to be based on untested, unreliable testimony, stamped with the imprimatur of "expert knowledge." See, *e.g.*, *Target Mktg. Publ'g, Inc.* v. *Advo, Inc.*, 136 F.3d 1139, 1143 (7th Cir. 1998) (court not obliged to submit to jury testimony by qualified astronomer that, "based on lengthy and careful observation," "the sun revolves around the earth").

IV. THE DISTRICT COURT DID NOT ABUSE ITS DISCRETION IN EXCLUDING CARLSON'S TESTIMONY

If this Court concludes that the Eleventh Circuit erred in holding that the *Daubert* factors are inapplicable to Carlson's testimony, there is no need to remand this case. Rather, as in *Joiner*, the Court should proceed to review the district court's application of the *Daubert* criteria and other considerations for abuse of discretion. *Joiner*, 118 S. Ct. at 517-19; see also *Daubert*, 509 U.S. at 598 (opinion of Rehnquist, C.J., joined by Stevens, J.)

(cautioning that articulation of admissibility standards can be "vague and abstract" unless standards are "applied to deciding whether particular testimony was or was not admissible"). Because the district court did not abuse its discretion in excluding Carlson's testimony, its judgment should be affirmed.

As we have previously demonstrated (at 32-36), the *Daubert* factors are well-suited to the task of evaluating the reliability of Carlson's tire-failure methodology. The district court's two opinions contain a detailed analysis of Carlson's approach and reflect careful consideration of each of the *Daubert* factors. The court's conclusion that none of the *Daubert* factors weighs in favor of admissibility is unassailable.

In addition to the *Daubert* factors, the district court cited a number of other considerations that cast doubt on the reliability of Carlson's testimony. For example, the court noted that Carlson "examined [the tire] for the first time on the morning that his deposition was taken," only "after Carlson had issued his written report and conclusions concerning the cause of the blowout." JA 34 & n.6. Other courts have concluded that such a "sentence first, verdict afterwards" methodology is by nature unreliable. See, *e.g.*, *Sorensen*, 31 F.3d at 649 ("reasoning from end result" by expert "turns scientific analysis on its head"); *Claar*, 29 F.3d at 502-03 ("[c]oming to a firm conclusion first and then doing research to support it is the antithesis of [the scientific] method").

The district court also stressed that Carlson "performed no tests on any of the minivan's tires"; his "analysis was limited to a visual inspection of the tire, even though he conceded that such actions as cutting the tire could reveal additional pertinent information." JA 34-35. Indeed, Carlson's review of the tire photographs failed to reveal a second, inadequately filled puncture where the separation began. Carlson also "adopted * * * almost verbatim as his own" the "report and conclusions" of his employer. JA 34 n.6, 179. And "neither the [respondents'] written submissions nor the Court's review of Carlson's voluminous deposition

transcripts indicates that [he] identified any affirmative evidence of a defect in the tire." JA 35.[20]

The district court also indicated that it had "carefully combed the hundreds of pages of deposition transcript submitted by the parties," and reviewed the parties' submissions, in reaching its decision to exclude Carlson's testimony. JA 44; see also JA 34 n.4, 91. Carlson admitted in his deposition that his opinion letter contained multiple errors — including his identification of the dates the tire was manufactured and examined, the depth of the remaining tread, and even his own conclusion that the tire had failed due to a "manufacturing" defect. Worse yet, in opposing petitioners' motion to strike Carlson's testimony, respondents submitted an affidavit signed by Carlson in which he not only *repeated* the errors acknowledged in his deposition but also *interjected new errors*, including the false assertions that he had examined the tire before the accident even took place and had done so in a laboratory.

Moreover, the record before the district court demonstrated that Carlson is a professional expert witness who was working exclusively for plaintiffs. Several circuits have counted as a factor against admissibility the fact that a proposed expert is a professional witness who "developed [his] opinion[] expressly for purposes of testifying" and is not "proposing to testify about matters growing naturally or directly out of research they have conducted independent of the litigation." *Daubert* v. *Merrell Dow Pharmaceuticals, Inc.*, 43 F.3d 1311, 1317 (9th Cir. 1995); accord *In re Paoli R.R. Yard PCB Litig.*, 35 F.3d 717, 742 & n.8 (3d Cir. 1994) (courts should consider whether an expert's methodology has been subjected to "non-judicial uses").

Nor is this all. Carlson devoted a grand total of no more than an hour to his post-hoc "examination" of both the failed tire and

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[20] The district court found "no inherent flaw in a process-of-elimination form of proof per se," at least "as long as the underlying methodology is scientifically valid." JA 36 n.7. Other courts, however, have concluded that where, as here, an expert's methodology is designed to yield a particular conclusion, the expert's method "turns scientific analysis on its head" and is unreliable. *Sorensen*, 31 F.3d at 649; see also *Stibbs* v. *MAPCO, Inc.*, 945 F. Supp. 1220, 1224-25 (S.D. Iowa 1996).

the other three tires on the vehicle; admitted that the separation most likely began under a bald spot on the tire where the tread was completely worn (and where there was a hole that Carlson failed to notice until his deposition); and failed to consider reams of evidence that he admitted could shed light on whether the tire had failed due to a design or manufacturing defect rather than abuse, including deposition testimony regarding the service or use of the vehicle and the tires, the accident report, design drawings and material specifications of the tire, the results of various test procedures, changes to designs or specifications, adjustment data, and evidence available from an inspection of the vehicle itself or from a tour of the factory. See, *e.g.*, *Claar*, 29 F.3d at 502 (expert who opined that chemical exposure caused neurological impairments failed to examine school records, which showed that such impairments predated exposures).

Finally, the record before the district court further demonstrated that Carlson departed, in this case, from the methodology he ordinarily applies to tire failure analysis. When an expert concocts a special methodology for a particular case, courts are rightly skeptical (just as they are skeptical when the expert departs from methods generally accepted in the expert's field). See, *e.g.*, *Braun*, 84 F.3d at 235. In view of all of these facts, which were part of the record so carefully considered by the district court, the court did not abuse its discretion in concluding that Carlson's testimony was "simply too unreliable, too speculative, and too attenuated to the scientific knowledge on which it is based to be of material assistance to the jury." JA 43.

In sum, the district court did not abuse its discretion by finding that the *Daubert* factors — and other pertinent facts and circumstances — established that Carlson's proffered testimony was unreliable. The trial court did exactly what this Court instructed it to do in carrying out its Rule 702 obligations. Because the "exclusion of unreliable evidence is a principal objective" of Rule 702, *Scheffer*, 118 S. Ct. at 1265, this Court should uphold the determination that Carlson's testimony was inadmissible.

CONCLUSION

The judgment of the court of appeals should be reversed.

Respectfully submitted.

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